

# BUILD A SPECTROPHOTOMETER

## SHOPPING LIST

### Materials

Photo	Item	Store	Cost (\$)	Notes
	18 gauge wire—2 colors, 3 feet (1 meter) each	Hardware store	1.62	Availability may vary by area and store. Alternatively, purchase a spool of 18-gauge speaker wire from RadioShack and separate the wires into black and red.
	1/4 inch Heat Shrink Tubing, quantity 4	Hardware store	1.95	OPTIONAL
	White 3/8" OD polyethylene tubing, 3-inch (8-cm) long piece	Hardware store	0.30	
	Household wax, 1 lb. package (4 blocks per box; you will need 2 blocks)	Grocery or Hardware store	3.99	
	12-inch (30 cm) bamboo skewers, quantity 2	Grocery store	2.00	
	Craftsman multimeter (Model # 82139)	Sears	29.99	In the video and guide, we used Sperry multimeter DM-4100A, which is now a legacy product. We now recommend the Craftsman 82139. Since it is auto-ranging, press the "range" button to limit the value and arrive at a reading more quickly. This multimeter comes with replacement fuses, but consider purchasing more: 0.5 A / 250 V fast-blow for the 400 mA range.
	Wooden craft box 21.5 x 13 inches (54.6 x 33 cm)	Craft store	4.99	Brand: Darice, Item#: 9180-12MLG found in the "wood crafts" section of Michaels. If you use a box of different dimensions, you will need to adjust the measurements in step 1 of the building instructions.
	Reflections photo storage box 7 1/2 x 11 x 4 1/4 inches (19 x 28 x 10.8 cm)	Craft store	1.66	The exact size of this box is not crucial; it just needs to be large enough to hold the spec and its components. Found in the scrap-booking section of Michaels. Item # sb1442

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	16-14 Blue butt splice, quantity 4	RadioShack	2.39	Comes in packages of 16 Item#: 64-3109
	Infrared LED	RadioShack	1.99	Item # 276-0143
	Infrared phototransistor	RadioShack	1.59	Item # 276-0145
	6-volt lantern battery	RadioShack	4.97	
	D-cell battery	RadioShack, hardware store, or grocery store	4.79	
	D-cell battery holder	RadioShack	0.99	Item#: 270-403
	Alligator clips with screw, quantity 6	RadioShack	6.58	Item#: 270-346
	Banana jacks, quantity 4	RadioShack	5.98	Item#: 274-725
	Banana Plugs, quantity 4	RadioShack	5.98	Item#: 274-721
	Glass sample tube, 10 mm diameter	Science supply store	3.53	We used a 10 mm test tube cuvette, but you could use a different size with some minor modifications to the design.

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## Tools

Item	Store	Cost (\$)	Notes
Paring or steak knife	Grocery store	4.00	
Bread knife	Grocery store	5.00	Could use any large serrated knife.
Metal skewer (or awl)	Grocery or hardware store	5.00	A metal BBQ skewer is recommended; however, you could use a scratch awl. Since an awl cannot bore as well as a skewer, be careful to not split the wood.
3/32 flat-bladed screwdriver	Hardware store	2.99	
Wire stripper/crimper	Hardware store	9.94	Found at Home Depot, Item Name: Commercial Electric 8 in. Multi-Purpose Wiring Tool, Item #: Commercial Electric 06008, Store SKU#: 972766
#2 x 4" flat-bladed screwdriver	Hardware store	0.88	Found at Home Depot, Item#: 008-005-NOB Store SKU#: 275051
#1 Phillips screwdriver	Hardware store	3.49	Found at Home Depot, Item#: 74303 Store SKU#: 678076

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